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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/606,905	06/26/2003	James E. Lindemuth	H1799-00187	5679

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EXAMINER

MCKINNON, TERRELL L

ART UNIT PAPER NUMBER

3743

DATE MAILED: 09/09/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/606,905

Applicant(s)

LINDEMUTH ET AL.

Examiner

Terrell L Mckinnon

Art Unit

3743

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 06 July 2004.
2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 13-16 is/are pending in the application.
4a) Of the above claim(s) _____ is/are withdrawn from consideration.
5) ☐ Claim(s) _____ is/are allowed.
6) ☒ Claim(s) 13-16 is/are rejected.
7) ☐ Claim(s) _____ is/are objected to.
8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
10) ☒ The drawing(s) filed on 26 June 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

The indicated allowability of claims 13-16 is withdrawn in view of the newly discovered reference to Tanaka et al. (U.S. 6,227,287). The rejections based on the newly cited reference are as follows.

Receipt is acknowledged of applicant's amendment filed July 6, 2004. Claims 1-12 have been canceled without prejudice. Claims 13-16 are pending and an action on the merits is as follows.

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 13 and 15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yamamoto et al. (U.S. 6,397,935) in view of Tanaka et al. (U.S. 6,227,287).

Yamamoto discloses a flat plate heat pipe comprising:

- a substantially L-shaped enclosure having an internal surface and a plurality of post (90) projecting from the internal surface (Figs. 4a, 5a and 13a);
- a working fluid disposed within the enclosure;

Art Unit: 3743

- a grooved wick disposed on at least a portion of the internal surface (51 and 46);
- the grooved wick including at least two lands that are in fluid communication with one another through a particle layer disposed between the at least two lands (Figs. 16a and 16b).

Yamamoto's invention fails to disclose the post being coated with a sintered wick powder; a particle layer comprising less than about six average particle diameters; and the particles are formed substantially of cooper.

3. However, Tanaka teaches the use of heat conducting post being coated with a wicking material (16d); a particle layer (206) comprising less than about six average particle diameters; and the particles are formed substantially of cooper.

Given the teachings of Tanaka, it would have been obvious to one of ordinary skill in the art at the time of the invention to modify the heat pipes post of Yamamoto with the post being coated with a sintered wick powder; a particle layer comprising less than about six average particle diameters; and the particles are formed substantially of cooper.

Doing so would improve the heat transferring capability of the heat pipe.

4. Claims 14 and 16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yamamoto et al. (U.S. 6,397,935) in view of Eastman (U.S. 4,274,479) as applied to claims above, and further in view of Khrustalev et al. (U.S. 6,536,510).

Yamamoto's invention discloses all of the claimed limitations from above except for the particle layer comprises a thickness that is less than about three average particle

Art Unit: 3743

diameters; and wherein six average particle diameters is within a range from about .005 millimeters to about .5 millimeters.

5. However, Khrustalev teaches a sintered grooved wick layer (64) wherein six average particle diameters is within a range from about .005 millimeters to about .5 millimeters (column 6, lines 51-54).

Given the teachings of Khrustalev, it would have been obvious to one of ordinary skill in the art at the time of the invention to further modify the heat pipe of Yamamoto with a particle layer comprising a thickness that is less than about three average particle diameters; and wherein six average particle diameters is within a range from about .005 millimeters to about .5 millimeters.

Doing so would provide an efficient wick thickness for transferring heat in a heat pipe.


Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Terrell L Mckinnon whose telephone number is 703-305-0059. The examiner can normally be reached on Monday -Thursday and every other Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Henry Bennett can be reached on 308-0101. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Art Unit: 3743

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).


Terrell L McKinnon
Primary Examiner
Art Unit 3743

September 7, 2004